Mediating effect of agency cost between employee stock ownership and corporate value

Yang Huan

[Abstract] The main discussion in this paper is whether employee stock ownership (ESOP) significantly improves corporate value and whether agency costs play a mediating role in the process of employee stock ownership affecting corporate value, that is, the governance effect of employee stock ownership. Through applying the mediation effect test method, we construct the model of "ESOP-agent costs-corporate value", and uses data of A-share non-ST and non-financial listed companies in 2009-2018 for empirical research. The study found that the implementation of ESOP did not significantly enhance the value of the company; it can significantly inhibit the first type of agency costs, but did not reduce the second type of agency costs; the first type of agency costs significantly increased the company's value. The two types of agency costs do not play a mediating role in the process of employee shareholding value.

[Keywords] employee stock ownership; agency cost; corporate value; mediating effect

I. Introduction

The separation of management rights and ownership leads to the principal-agent problem, that is, the conflict of interest between shareholders and managers, which causes the first type of agency problem. At the same time, in the enterprises with relatively concentrated ownership structure, the controlling shareholders and major shareholders have powers and Motivation controls listed companies to make profits for themselves by influencing the company's decision-making, thereby encroaching on the interests of small and medium-sized shareholders, which leads to the second type of agency problem. [1]

In addition, the employee stock ownership plan has two concepts, broad and narrow. The narrow employee stock ownership plan refers to the employee stock ownership plan defined in the document "Guiding opinions on deepening state-owned enterprise reform", while the broad employee stock ownership is in the narrow sense concept. It also includes equity incentives. The research object of this paper is a narrow employee shareholding, which is a system that allows ordinary employees to share corporate profits by owning common shares of the company.

At present, the research on employee stock ownership in academic circles mainly stays on the relevant theories and the characteristics of the employee stock ownership system itself [2], and compares the domestic and foreign employee stock ownership systems, in order to come up with suggestions for improving the Chinese employee stock ownership system. A small number of studies have involved the implementation of employee stock ownership, but the academic community has not reached a consensus conclusion. Some scholars believe that the implementation of employee stock ownership can significantly improve shareholder wealth or corporate performance [3, 4], some scholars believe that the implementation of employee stock ownership cannot significantly improve corporate performance [5]. This paper will further explore the implementation effect of employee stock ownership from the perspective of enterprise value, and analyze whether the agency cost plays a significant intermediary role in the process of employee stock ownership.

This paper applies the mediation effect test method to construct the model of "employee shareholding-agent cost-enterprise value", and uses the panel data of A-share non-ST and non-financial listed companies in 2009-2018 for empirical research. The study found that the implementation of employee stock ownership did not significantly enhance the value of the company; the implementation of employee stock ownership significantly inhibited the first type of agency costs, but did not reduce the second type of agency costs; the first type of agency costs decreased significantly The value of the company, the two types of agency costs do not play a mediating role in the process of

employee shareholding value.

The arguments for the rest of the paper are as follows: The second part is the theoretical analysis and model hypothesis, combing the existing literature and theory, analyzing the path of the employee's shareholding value, and proposing the hypothesis; the third part is the research design, including the sample selection and The model and variables are set; the fourth part is the analysis of empirical results, analyzing the effect of employee stock ownership on corporate performance; the fifth part is the research conclusions and reflection suggestions, summarizing the empirical results, comparing with the model hypothesis, analyzing the same as expected or For different reasons, make suggestions for the problems that arise.

II. Theoretical analysis and model hypothesis

(1) Employee stock ownership and corporate value

According to research by Huang Qunhui (2014) and other scholars, the employee stock ownership plan makes employees become the company's equity owners, which enables employees to share the company's excess income and share business risks, and has relatively consistent interests with its company and shareholders to improve corporate value. . At the same time, the two-factor theory also points out that industrialization gives capital owners a dominant position in distribution. The implementation of employee stock ownership allows laborers to earn income as capital owners in addition to labor income, which can greatly enhance the enthusiasm of workers. At the same time, some scholars have pointed out that the system design of employee stock ownership is very complicated. If the design is not in place, it will not only have the expected effect, but will affect the enterprise value.

Based on this, this paper proposes the following two competitive hypotheses:

Hypothesis 1A: The implementation of employee stock ownership can significantly increase corporate value.

Hypothesis 1B: The implementation of employee stocks cannot significantly increase corporate value.

(2) Employee shareholding and two types of agency costs

Employee stock ownership also gains the right to participate in corporate decision-making while enabling employees to obtain the claim for residual income. A shareholding employee can participate in the voting and dividends of the board of directors as a corporate legal person by forming an employee stock management committee. According to Jiang Yijun (1989), "employee subject theory" and "economic democracy theory", employee stock ownership enables employees to acquire the company's ownership, become the company's owner, and promote its concern for the company's property and interest accumulation, thus to a certain extent It can supervise and restrict the rent-seeking behavior of management and the short-selling behavior of major shareholders, thus alleviating the contradiction of agency. Based on this, this paper proposes the following hypothesis:

Hypothesis 2A: The implementation of employee stock ownership can significantly reduce the cost of the first type of agency.

Hypothesis 2B: The implementation of employee stock ownership can significantly reduce the cost of the second type of agency.

(3) Two types of agency costs and enterprise value

There is little research in the academic circles on whether agency costs will have a mediating effect on corporate value, but there are many studies on the impact of corporate performance. Agency theory believes that corporate governance mechanisms such as employee holdings, by reducing agency costs, the effect will ultimately be reflected in corporate performance. Zhou Jianhe and Yuan Deli (2013) pointed out that the two types of agency costs can play a partial intermediary role in the process of different corporate governance mechanisms affecting corporate performance. Hu Zemin et al. (2018) used the empirical data of China's small and medium-sized listed companies from 2013 to 2015 to find that the first type of agency costs can play a full mediating role in the process

of equity concentration in corporate performance. Based on this, this paper proposes the following two hypotheses:

Hypothesis 3A: The first type of agency costs play a mediating role in the process of employee ownership.

Hypothesis 3B: The second type of agency cost plays a mediating role in the process of employee ownership.

III. sample selection and research design

(1) Sample selection and data source

This paper selects the panel data of non-ST and non-financial listed companies in Shanghai-Shenzhen A-shares in 2009-2018 as the research object, and eliminates missing values, performs 5% tail-tailing treatment to eliminate the influence of extreme values, and then uses PSM propensity score matching method. The 1:1 ratio matches the sample companies in the same industry, based on the size, leverage and growth of the company. Finally, 1000 valid samples were obtained. The data sources are the Cathay Pacific CSMAR database and the Flush iFinD database.

(2) Definition and design of variables

Table 3.1 Variable Definition Table

Variable type	Variable name	Symbol	Variable calculation method
Explained variable	EVA	***EVA***	Post-tax net operating profit less capital cost
Explanatory variables	ESOP	***ESOP***	Implementation of employee stock holdings is "1" and not implemented as "0"
Mediator variable	First type of agency cost	***Ac1***	Total asset turnover
	Second type of agency cost	***Ac2***	Ratio of net other receivables to total assets at the end of the period
Control variable	Company Size	***Size***	The logarithm of the company's total assets at the end
	Growth	***Growth***	Company's main business income growth rate
	Market ratio	***Mtob***	Ratio of company market value to book value
	Cash turnover rate	***Cash***	Ratio of net cash flow from operating activities to total assets
	Management compensation level	***Pay***	Total management compensation
	Financial leverage	***Lev***	Assets and liabilities
	Equity concentration	***Share1***	The shareholding ratio of the largest shareholder
		Share5	The sum of the shareholding ratio of the top five shareholders
	Equity balance	***Iaop***	The ratio of the shareholding ratio between the largest shareholder and the second largest shareholder
	Board independence	***Indir***	The proportion of independent directors to the number of board members
	Tobin Q value	***Q***	The ratio of market value to its replacement value, measuring growth

(three) model setting

Drawing on the research of Wen Zhonglin (2004), the following test model is constructed:

Model 1：$EVA_t = \beta_0 + \beta_1 ESOP_t + \sum_m \beta_{2,m}\, Control_{m,t} + \mu_t$

Model 2A：$AC1_t = \beta_0 + \beta_1 ESOP_t + \sum_m \beta_{2,m}\, Control_{m,t} + \mu_t$

Model 2B：$AC2_t = \beta_0 + \beta_1 ESOP_t + \sum_m \beta_{2,m}\, Control_{m,t} + \mu_t$

Model 3A：$EVA_t = \beta_0 + \beta_1 AC1_t + \beta_2 ESOP_t + \sum_m \beta_{3,m}\, Control_{m,t} + \mu_t$

Model 3B：$EVA_t = \beta_0 + \beta_1 AC2_t + \beta_3 ESOP_t + \sum_m \beta_{3,m}\, Control_{m,t} + \mu_t$

The test is mainly divided into three steps: the first step, as shown in model 1, the employee's shareholding is used to regress the enterprise value to test whether the regression coefficient is significant; the second step, as shown in model 2, the agency cost and Employee shareholding returns to test whether the employee shareholding coefficient is significant; the third step is to put the agency cost into the model 1 and return the enterprise value together with the employee shareholding to form the model 3. On the basis of the significant model 1, it is tested whether the return of employee stocks to the value of the company is still significant. If it is not significant, it proves that the agency cost has a complete mediating effect; if it is still significant but the coefficient is lower than before, it proves that there is part mediation effect.

IV. The analysis of empirical results

(1) Descriptive statistics

It can be seen from the table that the average EVA of the employee shareholding implementation group is 4.47% higher than that of the unexecuted group, indicating that the value of the enterprise holding the employee shareholding increases more; meanwhile, the average value of the first type of agency cost of the implementation group is 54.08% lower than that of the unexecuted group. The second type of agency cost average is 11.35% lower than the unimplemented group. It is preliminarily stated that the two types of agents that implement employee stock ownership have lower costs.

Table 4.1 Descriptive statistics

	Oveall sample		Non-ESOP		ESOP		Compare	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean difference	percentage
EVA	235000000	1260000000	179000000	2300000000	187000000	823000000	-8000000	-4.47%
ESOP	0.5	0.5002502	0	0	1	0	-1	
Ac1	0.1115851	0.1505809	0.2293465	15.11111	0.105327	0.0982159	0.1240195	54.08%
Ac2	0.0182471	0.0311532	0.0180853	0.0354934	0.0160332	0.0218844	0.0020521	11.35%
Ac3	0.6230963	0.5483958	0.6830638	0.5834931	0.6192798	0.437457	0.063784	9.34%
Ac4	0.1139452	0.1194073	0.1080852	0.1020372	0.140208	0.1203666	-0.0321228	-29.72%
Size	22.60123	1.2493	22.01348	1.336312	22.46081	1.098506	-0.44733	-2.03%
Growth	0.6927052	8.507741	8.410088	966.4294	0.8225148	11.26281	7.5875732	90.22%
Cash	0.0369154	0.0771275	0.0344952	0.1141591	0.0365194	0.0692085	-0.0020242	-5.87%
Pay	15.49233	0.7355786	15.06036	0.7950559	15.43454	0.6495811	-0.37418	-2.48%
Mtob	0.5041618	0.2788735	0.5157177	0.253675	0.4335008	0.2130694	0.0822169	15.94%
Lev	0.4476573	0.2018162	0.4670022	0.9218533	0.40956	0.1912801	0.0574422	12.30%
Share1	32.1796	13.82515	52.77974	15.80511	30.87172	12.53528	21.90802	41.51%
Indir	0.371854	0.0553742	0.3714179	0.0549834	0.375318	0.0573783	-0.0039001	-1.05%
Q	3.341014	3.512681	3.178451	6.193407	3.622871	2.766857	-0.44442	-13.98%
Tec	0.166	0.3722668	0.1278945	0.3339809	0.224	0.4173396	-0.0961055	-75.14%
Share5	50.57357	14.30343	35.58687	15.32273	51.51982	13.20969	-15.93295	-44.77%

Iaop	9.064086	17.67934	12.88916	29.26986	5.411029	6.48552	7.478131	58.02%

Source: Guotaian Database and iFind Database

Note: Mean difference = implementation group mean - unimplemented group mean, percentage = mean difference / unimplemented group mean.

(2) Correlation analysis

The following is a correlation analysis of the main variables. It can be seen from the table that the employee shareholding is significantly positively correlated with EVA (Spearman correlation coefficient is 0.070***). The first type of agency cost is negatively correlated with employee shareholding, but not significant (The Pearson correlation coefficient is -0.042), the second type of agency cost is significantly negatively correlated with employee shareholding (Pearson correlation coefficient is -0.071**), and the first type of agency cost is significantly negatively correlated with firm value (Pearson correlation coefficient is -0.077***), Spearman correlation coefficient is -0.219***), and the second type of agency cost is significantly positively correlated with firm value (Pearson correlation coefficient is 0.164***). In addition, the remaining control variables such as executive compensation, equity checks and balances, equity concentration, and the proportion of independent directors are mostly related to corporate value. A regression analysis will be conducted to further explore the relationship between the main variables.

Table 4.2 Correlation analysis of main variables

	EVA	***ESOP***	***Ac1***	***Ac2***	***Pay***	***Share1***	***Share5***	***Iaop***	***Indir***
EVA	1	0.070**	-0.219***	-0.008	0.253***	0.079**	0.130***	-0.069**	-0.059*
ESOP	-0.038	1	0.088***	0.013	-0.053*	-0.071**	0.061*	-0.151***	0.052
Ac1	-0.077**	-0.042	1	-0.039	-0.099***	-0.200***	-0.137***	-0.128***	0.125***
Ac2	0.164***	-0.071**	0.172***	1	0.052*	-0.169***	-0.131***	-0.126***	0.037
Pay	0.311***	-0.079**	-0.074**	0.005	1	2.20E-02	0.070**	-0.078**	-0.087***
Share1	1.90E-02	-0.095***	-0.124***	-0.109***	4.60E-02	1	0.707***	0.620***	-0.023
Share5	0.063**	0.066**	-0.128***	-0.099***	0.095***	0.713***	1	-0.021	0.022
Iaop	-0.019	-0.207***	-0.05	-0.06*	-0.059*	0.446***	0.060*	1	-0.034
Indir	3.70E-02	0.063**	0.072**	0.015	-0.095***	2.00E-03	0.033	0.022	1

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Source: Guotaian Database and iFind Database

(III) Analysis of regression results

Table 4.3 Summary of regression results

		Model 1	Model 2		Model 3	
Explained variable		*EVA*	*Ac1*	*Ac2*	*EVA*	*EVA*
Explanatory variables	*ESOP*	42900000	0.1288513***	0.0064494*	-7542366	26900000
		(0.52)	(3.82)	(1.89)	(-0.28)	(0.33)
Mediator variable					118000000***	2470000000**
					(3.25)	(2.26)
Control variable	*c*	-6840000000***	1.498687***	0.1201231**	-6090000000***	-7140000000***
		(-5.48)	(2.91)	(2.30)	(-14.34)	(-5.71)
	Cash	477000000**	0.2410574***	-0.0142584	484000000***	512000000**
		(2.21)	(2.71)	(-1.58)	(2.89)	(2.38)

Size	203000000***	-0.0849758***	-0.0060462***	223000000***	218000000***
	(3.81)	(-3.87)	(-2.72)	(11.83)	(4.08)
Lev	-417000000***	0.0206449	0.0112525*	-201000000***	-444000000***
	(-2.70)	(0.32)	(1.74)	(-2.65)	(-2.88)
Growth	8487013	0.1571622***	-0.0006762	-7110381	10200000
	(0.25)	(11.36)	(-0.48)	(-0.26)	(0.30)
MtoB	-178000000	0.0250994	0.0146115**	-435000000***	-214000000
	(-1.19)	(0.41)	(2.33)	(-4.39)	(-1.43)
Pay	174000000***	0.0510866**	0.0006082	90300000***	172000000***
	(3.38)	(2.41)	(0.28)	(3.99)	(3.36)
Share1	7602363*	0.0043305**	-0.0005727***	1878577	9018169**
	(1.79)	(2.48)	(-3.24)	(0.95)	(2.11)
Share5	-6715272*	0.0002627	0.0002384	-710549.8	-7304568**
	(-1.82)	(0.17)	(1.55)	(-0.44)	(-1.98)
Iaop	-3604135	0.0002333	-0.0000561	-2213121	-3465501
	(-1.13)	(0.18)	(-0.42)	(-1.11)	(-1.09)
Indir	99800000	-0.1291333	0.0265579	-8751376	34100000
	(0.19)	(-0.59)	(1.19)	(-0.03)	(0.06)
Q	9653623	-0.0082467	0.0015306**	8553135	5869445
	(0.62)	(-1.29)	(2.37)	(0.83)	(0.38)
R^2	9.57%	29.46%	6.02%	7.43%	10.53%
F/WaldTest	F(13,474)=3.86	F(13,474)=15.23	F(13,474)=2.33	Wald(14)=302.50	F(14,473)3.98
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Hausman Test	Prob>chi2=0.0268	Prob>chi2=0.0000	Prob>chi2=0.0005	Prob>chi2=0.0916	Prob>chi2=0.0292

Source: CSMAR Database and iFind Database

The regression results of Model 1 show that the regression coefficient of employee stock ownership to corporate value is positive (42900000) but not significant, indicating that the implementation of employee stock ownership plan has not brought about a significant increase in corporate value, validating hypothesis 1B.

The regression results of Model 2A show that the return of employee stock ownership to the first type of agency cost Ac1 is significantly positive (0.1288513***), indicating that the implementation of employee stocks increases the total asset turnover rate, which reduces the first type of agency costs. Therefore, the hypothesis 2A is verified; the regression result of model 2B shows that the return of employee stock ownership to the second type of agency cost is significantly positive (0.0064494*), indicating that the implementation of employee stock ownership fails to reduce the second type of agency cost of the enterprise, rejecting The hypothesis 2B.

The regression results of Model 3A show that after adding the first type of agency cost in Model 1, the coefficient of employee stock ownership dropped significantly by 117.58% (from 42900000 to -7542366), and the regression coefficient of the mediator variable Ac1 was significantly positive (118000000). ***), indicating that lowering the first type of agency cost can bring about an increase in enterprise value, but since the coefficient of ESOP in Model 1 does not pass the significance test, it cannot fully explain the value of the first type of agency cost in the employee shareholding role. There is a mediating effect in the process, so that the hypothesis 3A cannot be verified;

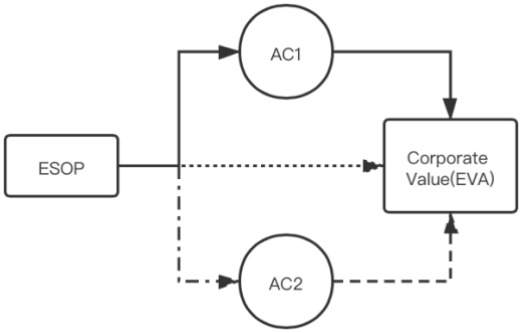
The regression results of Model 3B show that after adding the second type of agency cost to Model 1, the coefficient of employee stock ownership is still positive (26900000), which is 37.3% lower than Model 2's 42900000, but due to ESOP in Model 1. The coefficient did not pass the significance test, so the hypothesis 3B could not be

verified; in addition, the regression coefficient of the second type of agency cost to the enterprise value was significantly positive (2470000000**), which was not in line with expectations.

(4) Robustness test

To ensure that the conclusions are reliable and not accidental, we conducted a robustness test. ROA is used as the proxy variable of enterprise value. The ratio of management expenses to main business income is used as the proxy variable of the first type of agency cost. The ratio of the net receivables to the total assets is used as the proxy variable of the second type of agency cost. The conclusion of the robustness test is the same as that of the main test. For reasons of space, it will not be repeated here.

V. Conclusions and suggestions



Based on the existing research, this paper constructs a mediation effect test model of "employee shareholding-agent cost-enterprise value", and uses the data of China's A-share non-ST non-financial listed companies in 2009-2017. The governance effect has been empirically tested. The results show:

First, the implementation of employee stock ownership did not bring significant improvement to the value of the company, and failed to achieve the expected incentive effect;

Second, the implementation of employee stocks significantly reduces the cost of the first type of agency; there is no reduction in the cost of the second type of agency.

Third, reducing the first type of agency costs can bring significant improvements to the company's value, but the mediating role of the two types of agency costs has not been verified.

Our research mainly proves that the implementation of employee stock ownership can reduce the first type of agency cost, and the reduction of the first type of agency cost has a positive effect on the improvement of enterprise value. This is the mechanism for fully understanding the role of employee shareholding in corporate value. The conduction route provides a reference. However, it should be pointed out that there are still many shortcomings in our research. In view of the fact that employees' shareholdings fail to enhance the value of enterprises, we believe that there are still many defects in the employee stock ownership system in China, lack of practical experience, and inadequate laws and regulations. The loopholes in the system and practice of free-riding behavior have led to the failure to achieve good results in the implementation of the employee stock ownership system in China. Combining the successful cases of employees holding shares in domestic and foreign enterprises, we give the following suggestions: First, improve relevant laws and regulations, combine China's national conditions and practical experience, improve the legislation and management methods for employee stock ownership; Second, improve system planning, Including policy planning, model planning and institutional evaluation planning; third, improve the equity trading mechanism of employee stock ownership, reduce the cost of equity transactions; Fourth, establish an enterprise micro-governance structure that is compatible with the employee stock ownership system, and optimize the shareholding structure.

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